

## AUTHOR INDEX

- Barnas, G.M., Harinath, P., Green, M.D., Suki, B., Kaczka, D.W. and Lutchen, K.R., Influence of waveform and analysis technique on lung and chest wall properties, 331
- Bartlett Jr., D. and Knuth, S.L., Influence of hypoxia on ventilatory responses to intralaryngeal CO<sub>2</sub> in cats, 61
- Bennie, R.E., see Packer, C.S., 213
- Berkenbosch, A., see Wolsink, J.G., 25
- Bissonnette, J.M., Hohimer, A.R. and Knopp, S.J., A cholinergic mechanism involved in fetal breathing during the high voltage ECoG state, 151
- Breitenbücher, A., Chediak, A.D. and Wanner, A., Effect of lung volume and intrathoracic pressure on airway mucosal blood flow in man, 249
- Burleson, C., see Morgan, D.W., 345
- Chediak, A.D., see Breitenbücher, A., 249
- Chen, L., see Marshall, B.E., 231
- Clancy, R.L., see Gonzalez, N.C., 111
- Clarke, W.R., see Marshall, B.E., 231
- Costarino, A.T., see Marshall, B.E., 231
- Craib, M.W., see Morgan, D.W., 345
- DeGoede, J., see Wolsink, J.G., 25
- Donic, V., see Tomori, Z., 163
- Eager, K.R., Robinson, B.J., Galletly, D.C. and Miller, J.H., Endogenous opioid modulation of hypercapnic-stimulated respiration in the rat, 13
- Filarski, K., see Morgan, D.W., 345
- Fung, M.-L., Wang, W. and St. John, W.M., Involvement of pontile NMDA receptors in inspiratory termination in rat, 177
- Fung, M.-L. and John, W.M.S., Separation of multiple functions in ventilatory control of pneumotaxic mechanisms, 83
- Fung, M.-L. and St. John, W.M., Electrical stimulation of pneumotaxic center: activation of fibers and neurons, 71
- Galletly, D.C., see Eager, K.R., 13
- Garland, R.J., Kinkead, R. and Milsom, W.K., The ventilatory response of rodents to changes in arterial oxygen content, 199
- Gilmour, K.M., Randall, D.J. and Perry, S.F., Acid-base disequilibrium in the arterial blood of rainbow trout, 259
- Gonzalez, N.C., Perry, K., Moue, Y., Clancy, R.L. and Piiper, J., Pulmonary gas exchange during hypoxic exercise in the rat, 111
- Green, M.D., see Barnas, G.M., 331
- Griffin, A. and Scott, R.H., Properties of K<sup>+</sup> currents recorded from cultured ovine trachea submucosal gland cells, 297
- Guénard, H., see Zhao, W., 285
- Harinath, P., see Barnas, G.M., 331
- Hildebrandt, J., see Kikuchi, R., 127
- Hohimer, A.R., see Bissonnette, J.M., 151
- Huang, Q., see Nattie, E.E., 189
- Hussain, S.N.A., see Wilson, C.R., 1
- Iwamoto, J., Krasney, J.A. and Morin III, F.C., Methemoglobin production by nitric oxide in fresh sheep blood, 273
- Ji, L.L., see Lawler, J.M., 139
- John, W.M.S., see Fung, M.-L., 83
- Jordan, S., see Morgan, D.W., 345
- Kaczka, D.W., see Barnas, G.M., 331
- Kikuchi, K., see Kikuchi, R., 127
- Kikuchi, R., Kikuchi, K., Hildebrandt, J., Sekizawa, K., Yamaya, M. and Sasaki, H., Bronchomotor agents and hysteresis of colateral resistance in dog lobe, 127
- Kinkead, R., see Garland, R.J., 199
- Knopp, S.J., see Bissonnette, J.M., 151

- Knuth, S.L., see Bartlett Jr., D., 61  
 Kordus, M.J., see Lawler, J.M., 139  
 Krahenbuhl, G.S., see Morgan, D.W., 345  
 Krasney, J.A., see Iwamoto, J., 273  
 Kurpas, M., see Tomori, Z., 163
- Lawler, J.M., Powers, S.K., Van Dijk, H., Visser, T., Kordus, M.J. and Ji, L.L., Metabolic and antioxidant enzyme activities in the diaphragm: effects of acute exercise, 139  
 Leiter, J.C., see Manning, H.L., 99  
 Li, A., see Nattie, E.E., 189  
 Lutchén, K.R., see Barnas, G.M., 331
- Magder, S., see Wilson, C.R., 1  
 Manning, H.L., Slogic, S. and Leiter, J.C., Tidal volume perception in normal subjects: the effect of altered arterial  $P_{CO_2}$ , 99  
 Marshall, B.E., Clarke, W.R., Costarino, A.T., Chen, L., Miller, F. and Marshall, C., The dose-response relationship for hypoxic pulmonary vasoconstriction, 231  
 Marshall, C., see Marshall, B.E., 231  
 McLean, H.A. and Remmers, J.E., Respiratory motor output of the sectioned medulla of the neonatal rat, 49  
 Miller, F., see Marshall, B.E., 231  
 Miller, J.H., see Eager, K.R., 13  
 Mills, J., see Nattie, E.E., 189  
 Milsom, W.K., see Garland, R.J., 199  
 Morgan, D.W., Craib, M.W., Krahenbuhl, G.S., Woodall, K., Jordan, S., Filarski, K., Burleson, C. and Williams, T., Daily variability in exercise ventilation, 345  
 Morin III, F.C., see Iwamoto, J., 273  
 Moue, Y., see Gonzalez, N.C., 111
- Nagaki, M., Sasaki, T., Shimura, S., Satoh, M., Takishima, T. and Shirato, K., CGRP induces  $[Ca^{2+}]_i$  rise and glycoconjugate secretion in feline tracheal submucosal gland, 311  
 Nattie, E.E., Li, A., Mills, J. and Huang, Q., Retrotrapezoid nucleus muscarinic receptor subtypes localized by autoradiography, 189
- Okayama, H., see Satoh, M., 321  
 Olivier, C.N., see Wolsink, J.G., 25
- Packer, C.S., Bennie, R.E., Powell, D.R. and Rhoades, R.A., Neonatal hypoxia: long term effects on pulmonary arterial muscle, 213
- Palenikova, R., see Tomori, Z., 163  
 Perry, K., see Gonzalez, N.C., 111  
 Perry, S.F., see Gilmour, K.M., 259  
 Piiper, J., see Gonzalez, N.C., 111  
 Powell, D.R., see Packer, C.S., 213  
 Powers, S.K., see Lawler, J.M., 139
- Randall, D.J., see Gilmour, K.M., 259  
 Remmers, J.E., see McLean, H.A., 49  
 Rhoades, R.A., see Packer, C.S., 213  
 Robinson, B.J., see Eager, K.R., 13
- Sasaki, H., see Kikuchi, R., 127  
 Sasaki, T., see Nagaki, M., 311  
 Sasaki, T., see Satoh, M., 321  
 Satoh, M., see Nagaki, M., 311  
 Satoh, M., Shimura, S., Sasaki, T., Yamamoto, M., Okayama, H., Takishima, T. and Shirato, K., Magnesium regulates ion transport across canine tracheal epithelium, 321  
 Scott, R.H., see Griffin, A., 297  
 Sekizawa, K., see Kikuchi, R., 127  
 Sekizawa, S.-i. and Tsubone, H., Nasal receptors responding to noxious chemical irritants, 37  
 Shimura, S., see Nagaki, M., 311  
 Shimura, S., see Satoh, M., 321  
 Shirato, K., see Nagaki, M., 311  
 Shirato, K., see Satoh, M., 321  
 Slogic, S., see Manning, H.L., 99  
 St. John, W.M., see Fung, M.-L., 177  
 St. John, W.M., see Fung, M.-L., 71  
 Suki, B., see Barnas, G.M., 331
- Takishima, T., see Nagaki, M., 311  
 Takishima, T., see Satoh, M., 321  
 Tomori, Z., Donic, V., Kurpas, M. and Palenikova, R.,  
 Sniff-like aspiration reflex evoked by pressure pulses from the upper airways in cats, 163  
 Tsubone, H., see Sekizawa, S.-i., 37
- Van Dijk, H., see Lawler, J.M., 139  
 Vanelli, G., see Wilson, C.R., 1  
 Visser, T., see Lawler, J.M., 139
- Wang, W., see Fung, M.-L., 177  
 Wanner, A., see Breitenbücher, A., 249  
 Williams, T., see Morgan, D.W., 345  
 Wilson, C.R., Vanelli, G., Magder, S. and Husain, S.N.A., Phrenic afferent stimulation by

- bradykinin and the distribution of the inspiratory motor drive, 1
- Wolsink, J.G., Berkenbosch, A., DeGoede, J. and Olievier, C.N., Ventilatory interaction between hypoxia and hypercapnia in piglets shortly after birth, 25
- Woodall, K., see Morgan, D.W., 345
- Yamamoto, M., see Satoh, M., 321
- Yamaya, M., see Kikuchi, R., 127
- Zhao, W. and Guénard, H., Bronchial smooth muscle energetics: effect of iodoacetate and hypoxia, 285



## SUBJECT INDEX

- Acid-base equilibrium
  - arterial blood (trout), 259
- Afferents
  - phrenic, bradykinin, 1
  - trigeminal nerve, chemosensitivity, 37
- Airways
  - blood flow, lung volume, intrathoracic pressure, 249
- Blood
  - equilibrium curve, temperature coefficients, 111
  - NO, methemoglobin, 273
- Blood flow
  - airways, soluble inert gases, 249
- Bronchi
  - smooth muscle, metabolism, hypoxia, 285
- Carbon dioxide
  - airways, systemic hypoxia, normoxia, 61
  - excretion, acid-base disequilibrium (trout), 259
  - tidal volume perception, 99
- Carbon monoxide
  - ventilatory response, 199
- Carbonic anhydrase
  - fish blood, 259
- Chemoreceptors
  - central, 189
  - peripheral, central, CO<sub>2</sub>, 25
- Chemosensitivity
  - respiratory, medulla, 49
- CO<sub>2</sub>
  - response, opioids, 13
- Collateral ventilation
  - smooth muscle tone, 127
- Control of breathing
  - airway CO<sub>2</sub>, normoxia, hypoxia, 61
  - central chemoreceptors, 189
  - central motor output, 49
  - central rhythm generation, 83
  - CO<sub>2</sub> response, opioids, 13
  - hypoxic ventilatory response, arterial O<sub>2</sub> content, 199
  - inspiratory muscles, bradykinin, 1
  - nasal afferents, chemosensitivity, 37
  - NMDA receptors, 177
  - O<sub>2</sub>, CO<sub>2</sub> sensitivity, 25
  - pneumotaxic center, 71
  - sleep, central mediators (fetal sheep), 151
- Current
  - voltage-dependent K<sup>+</sup>, submucosal gland cells, 297
- Development
  - chemosensitivity (piglet), 25
  - neonatal hypoxia, pulmonary arterial smooth muscle, 213
- Diffusing capacity
  - lung, hypoxia, exercise, 111
- Elastance
  - respiratory system, external forcing, 331
- Enzyme
  - metabolic, diaphragm, exercise, 139
- Epithelium
  - tracheal, ion transport, 321
- Exercise
  - diaphragm, enzyme activity, 139
  - hypoxia, pulmonary gas exchange (rat), 111
  - submaximal, variation of ventilation, 345
- Fetal breathing
  - sheep, muscarinic effects, 151
- Fish
  - trout (*Oncorhynchus mykiss*), 259
- Gas exchange
  - pulmonary, exercise, hypoxic rat, 111
- Gland
  - submucosal, K<sup>+</sup> current, 297
  - submucosal, trachea, intracellular Ca<sup>2+</sup>, 311
- Glycoconjugate secretion
  - submucosal gland, CGRP, 311
- Hemoglobin
  - metHb, NO, 273
- Hypoxia
  - airway CO<sub>2</sub>, 61
  - bronchial smooth muscle metabolism, 285
  - CO<sub>2</sub> sensitivity, 25
  - exercise, pulmonary gas exchange (rat), 111
  - neonatal, pulmonary arterial smooth muscle,

- 213
  - pulmonary vasoconstriction, 231
  - vs carbon monoxide, ventilatory response, 199
- Inert gases
  - soluble, airways blood flow, 249
- Interaction
  - O<sub>2</sub>, CO<sub>2</sub> chemosensitivity, 25
- Ion transport
  - tracheal epithelium, electrical properties, 321
- K<sup>+</sup>
  - channel, submucosal gland cell, 297
- Kainic acid
  - pneumotoxic center, 83
- Mung blood flow
  - hypoxia, 231
- Mammals
  - cat, 61, 71, 83, 163, 189, 311
  - cattle, 285
  - dog, 1, 127, 231, 321, 331
  - ground squirrel (*Spermophilus lateralis*), 199
  - guinea pig, 37
  - human, 99
  - humans, 249, 345
  - piglets, 25
  - rat, 13, 111, 139, 177, 199, 213
  - rat, neonatal, 49
  - sheep, 273, 297
  - sheep (fetal), 151
- Mechanics of breathing
  - resistance, compliance, mechanical ventilation, 331
- Mediators
  - bradykinin, diaphragm, 1
  - calcitonin gene-related peptide, 311
  - central, acetylcholine, fetal breathing, 151
  - NMDA, inspiratory off-switch, 177
  - opioids, ventilatory CO<sub>2</sub> response, 13
- Medulla
  - pons, pattern of breathing, 83
  - pons, rhythm generation, 71
  - slices, chemoreceptors, 189
- Membrane potential
  - tracheal epithelium, cations, 321
- Metabolism
  - bronchial smooth muscle, hypoxia, iodoacetate, 285
- Methemoglobin
  - NO, 273
- Muscle
  - bronchial smooth, metabolism, 285
  - diaphragm, enzyme activity, 139
  - diaphragm, stimulation, bradykinin, 1
  - smooth, pulmonary artery, neonatal hypoxia, 213
- Nitric oxide
  - metHb formation, 273
- Opioids
  - agonist, antagonist, ventilatory CO<sub>2</sub> response, 13
- Oxygen radicals
  - exercise, diaphragm, 139
- Pattern of breathing
  - inspiratory off-switch, NMDA receptors, 177
- Perception
  - tidal volume, CO<sub>2</sub>, 99
- Pharmacological agents
  - <sup>3</sup>H-QNB, 189
  - ammonia, 37
  - capsaicin, 37
  - CNQX, DNQX, 177
  - dermorphin, 13
  - iodoacetate, bronchial smooth muscle, 285
  - Kainic acid, 177
  - muscarinic agonists, 189
  - muscarinic antagonists, 189
  - naloxone, 13
  - nicotine, 37
  - NMDA antagonists, MK 801, AP-5, 177
- Pneumotoxic center
  - various functions, 83
- Pressure
  - intrathoracic, airways blood flow, 249
  - pulses, upper airways, respiratory reflexes, 163
- Pulmonary blood flow
  - hypoxia, 231
- Pulmonary circulation
  - neonatal hypoxia, 213
- Receptors
  - larynx, CO<sub>2</sub> sensitivity, hypoxia, 61
  - muscarinic, ventral medullary slices, 189
  - NMDA, pons, inspiratory off-switch, 17
- Reflex
  - aspiration, pressure pulses upper airways, 163
- Resistance
  - airways, external forcing, 331
  - pulmonary vascular, hypoxia, 231
- Rhythm
  - respiratory, generation, 49, 71
- Sensation
  - respiratory, CO<sub>2</sub>, 99
- Sheep
  - fetal breathing, central mediators, 151

## Smooth muscle

- bronchial, metabolism, 285
- tone, bronchial, collateral channels, 127

## Trachea

- epithelium, ion transport, 321
- submucosal gland, CGRP, 311

## Upper airways

- pressure pulses, breathing pattern, 163

## Ventilation

- collateral, smooth muscle tone, 127
- mechanical, external forcing, 331
- tidal volume perception, 99
- variability, submaximal exercise, 345

## Volume

- lung, airways blood flow, 249